

Abritus 72 Ltd

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Abrites Commander
for
Toyota/Lexus/Scion

A · B · R · I · T · E · S
automotive solutions



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Issued by: Abritus 72 Ltd.

www.ABRITUS72.com

www.ABRITES.com

1619 Sofia

Bulgaria

Tel: +359 2 9550456

mailto: support@abritus72.com

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INTRODUCTION

Congratulations for choosing our wonderful product!

“Abrates Commander for Toyota/Lexus/Scion” is a Windows PC based diagnostic software for Toyota, Lexus and Scion vehicles. With the help of this software you can perform complete diagnostic operations of all vehicles.

For proper operation of your diagnostic software you will need from corresponding interface for connection between your PC and vehicle named “AVDI”.

AVDI is an interface produced by ABRITUS 72 Ltd. intended for interface between PC and electronic control units.

AVDI should be used with ABRITES software produced by Abritus 72 Ltd.

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1.1 Scope of the manual

This document describes usage of Abrites Commander for Toyota/Lexus/Scion. The document is applicable for the software versions 4.0 and followed.

In this manual we suppose that software for your AVDI interface is already installed. Please refer "AVDI Common User's Manual".

SYSTEM REQUIREMENTS

System requirements:

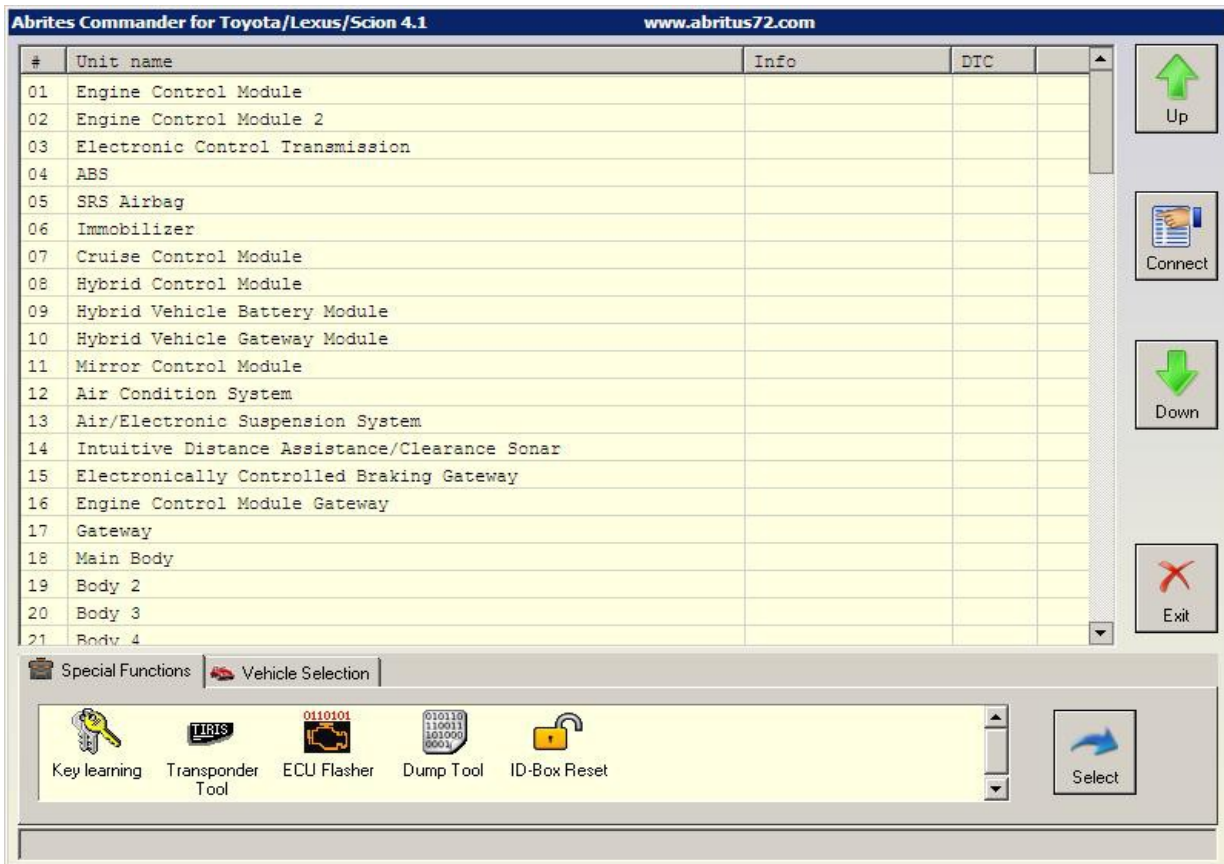
- Operation system Windows XP, Windows 2000, Windows Vista, Windows 7
- At least Pentium 4 with 512 MB RAM.

Note: Windows RT not supported!

GETTING STARTED

You can start Abrates Commander for Toyota/Lexus/Scion by starting of Abrates Quick Start application and selection of Toyota, Lexus or Scion.

When diagnostic application is started will appear main screen of the application – picture 1.



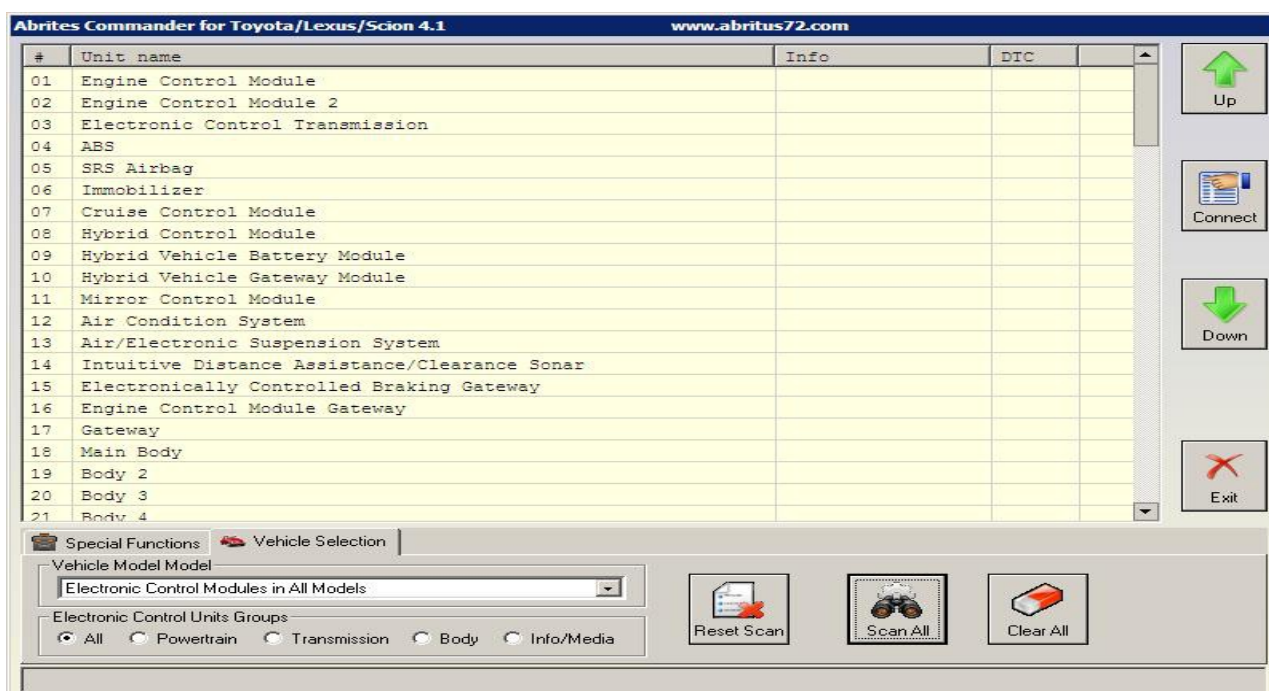
Picture 1

The screen is divided on two parts – upper part where are listed all electronic control units assembled in Toyota, Lexus or Scion vehicles and lower part of the screen where are listed some special functionalities available in your diagnostic software.

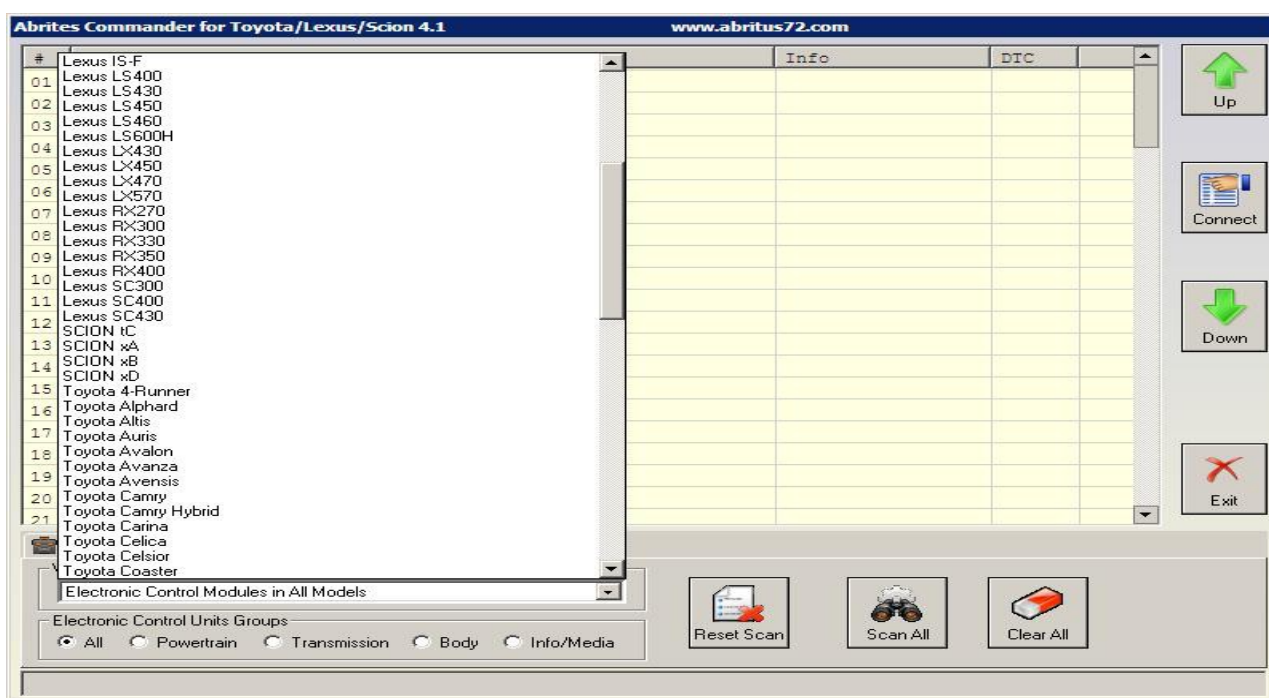
Lower part of the main screen can be used for selection of a vehicle model and group of electronic control units displayed in the upper part of the main screen – picture 2a,2b.

Displayed functionality on the lower part of the screen can be exchanged by pressing of

 Special Functions or  Vehicle Selection tabs.



Picture 2a




Picture 2b

By double-clicking on desired electronic control unit user can establish diagnostic session with corresponding control unit.

Once selected an unit from the list user can move selection up and down in the list by usage of the

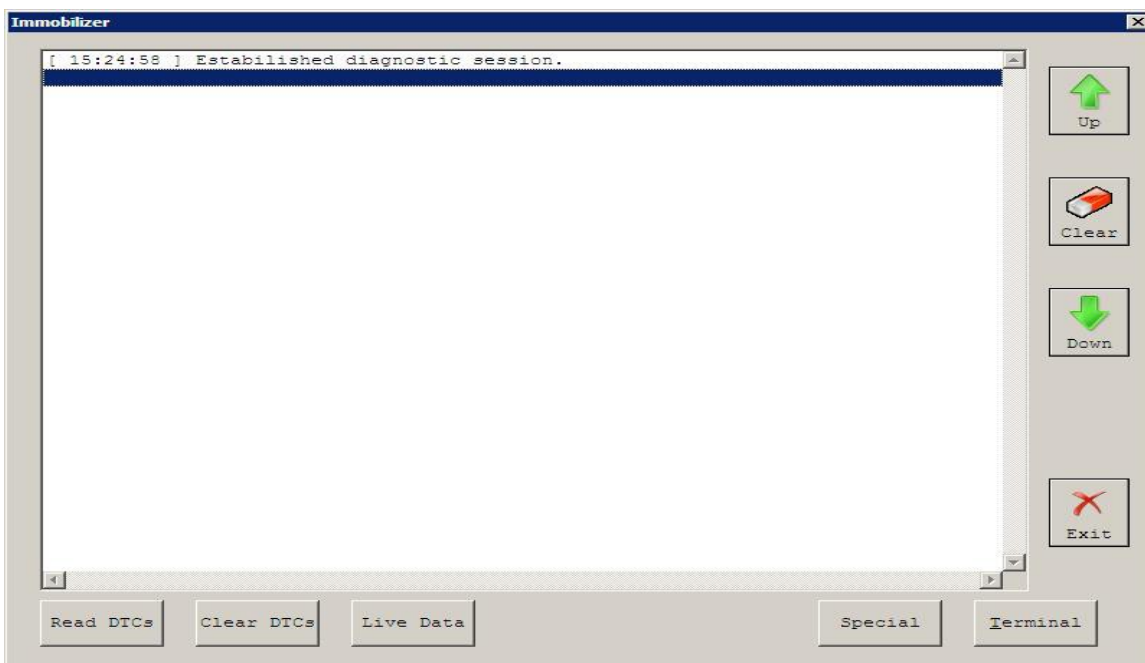
buttons  Up and  Down .

The button  Connect will establish diagnostic session with currently selected electronic control unit.

BASIC DIAGNOSTIC

As was described you can establish diagnostic session with some electronic control unit in the vehicle.

When diagnostic session is established will appear basic diagnostic screen (picture 3)



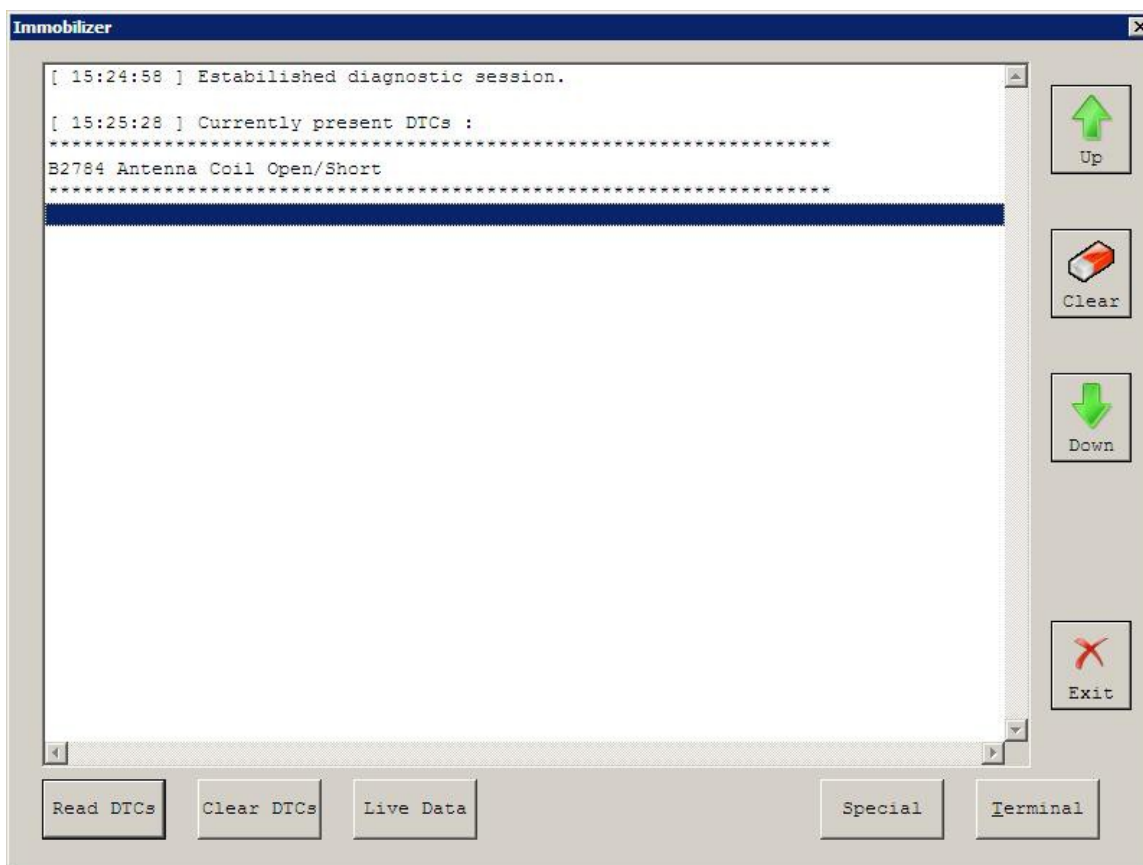
Picture 3

If by some reasons diagnostic session can not be established you will be notified.

In the basic diagnostic screen you have a choice to read registered DTCs, clear them, display live data or to perform other actions from the button named "Special".

To read all DTCs press the button "Read DTCs" - will be displayed all DTCs with their status – current, history or pending.

Each DTCs is described with it number (Uxxxx, Bxxxx or Cxxxx) and with detailed description – picture 4.



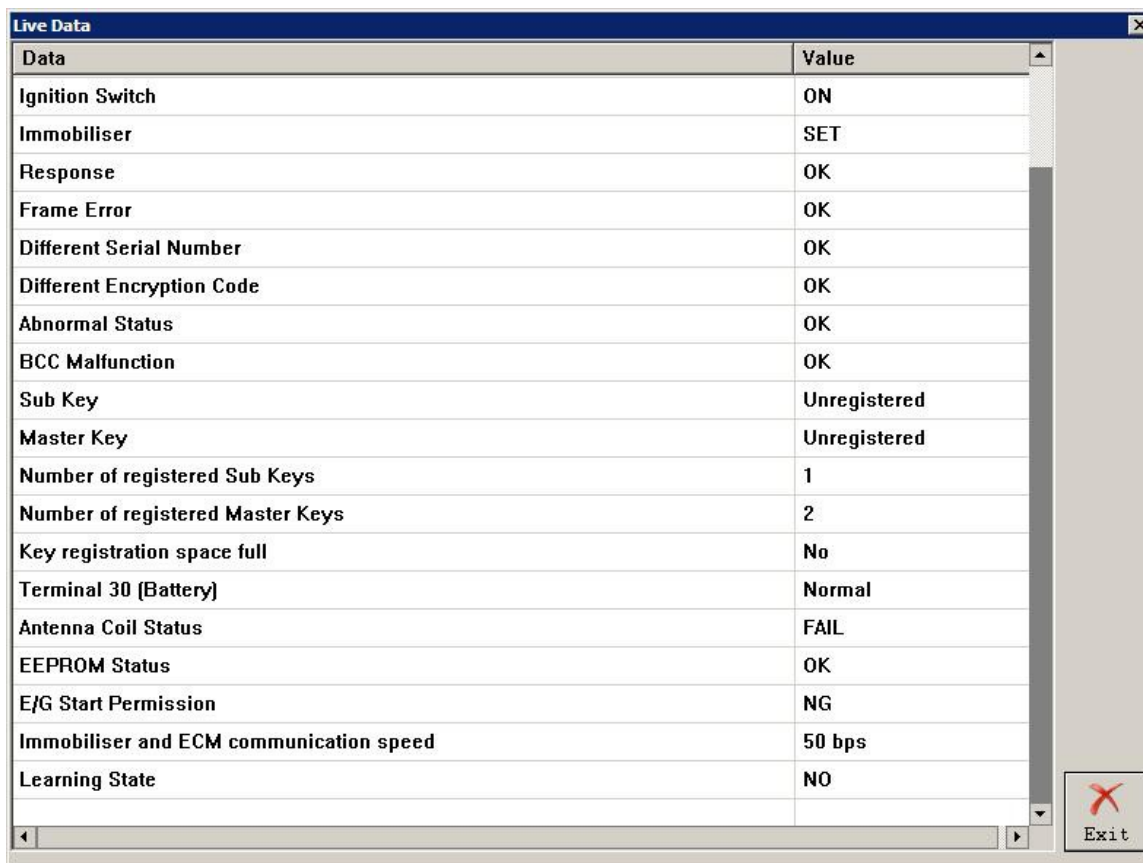
Picture 4

To clear stored DTCs in the electronic control unit press button "Clear DTCs".

Live data or so named measured values is data provided from the electronic control units giving us detailed view of the current status of the corresponding unit.

Simple press “Live Data” button and will be displayed all available from current unit – Picture 5.

A list with the units where is available live data is present in appendix A.



The screenshot shows a window titled "Live Data" with a table of vehicle status data. The table has two columns: "Data" and "Value". The data is as follows:

Data	Value
Ignition Switch	ON
Immobiliser	SET
Response	OK
Frame Error	OK
Different Serial Number	OK
Different Encryption Code	OK
Abnormal Status	OK
BCC Malfunction	OK
Sub Key	Unregistered
Master Key	Unregistered
Number of registered Sub Keys	1
Number of registered Master Keys	2
Key registration space full	No
Terminal 30 (Battery)	Normal
Antenna Coil Status	FAIL
EEPROM Status	OK
E/G Start Permission	NG
Immobiliser and ECM communication speed	50 bps
Learning State	NO


At the bottom right of the window is an "Exit" button with a red X icon.

Picture 5

Your diagnostic tool can provide you a wide range of additional special diagnostic procedures available by pressing the button “Special”.

In the appendix “B” is present list of currently available special functions depends selected unit.

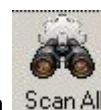
VEHICLE SELECTION

By selection of  Vehicle Selection tab placed on the main screen of your Abrates Commander for Toyota/Lexus/Scion you will have a option to select exact model of your vehicle or group of electronic control units. These options are useful for you because will reduce amount of displayed electronic control units on the screen. Additionally this amount can be reduced by clarification of control unit purpose group – power train, transmission, body and infotainment.



Once defined the set of displayed unit list can perform following actions for the units from the list:

- Check availability and DTCs for all units from the list (SCAN) – press button




- Clear all DTCs in the list – press button

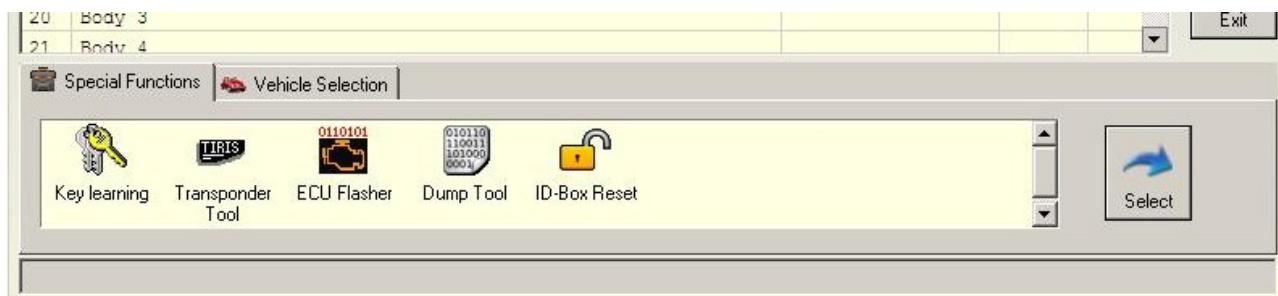


- Reset SCAN data in the list – press button



SPECIAL FUNCTIONS

The ABRITES Commander for Toyota/Lexus/Scion has some unique diagnostic abilities, which are not supported by other diagnostic tools. These functions are accessible from the  Special Functions tab on the main screen. Please, note that depending on the version you have purchased some of these functions may not be available in your configuration. In this case a message will inform you that you need to acquire an additional license.



1.2 Special function “Key learning”

When is selected “Key learning” special function it is very important to follow exact directions of the application.

This function will automatically recognize one of the following types anti theft systems used in your vehicle:

- Separate immobilizer control unit synchronized with the engine control module
- Smart Access System
- Immobilizer system integrated in the engine control module

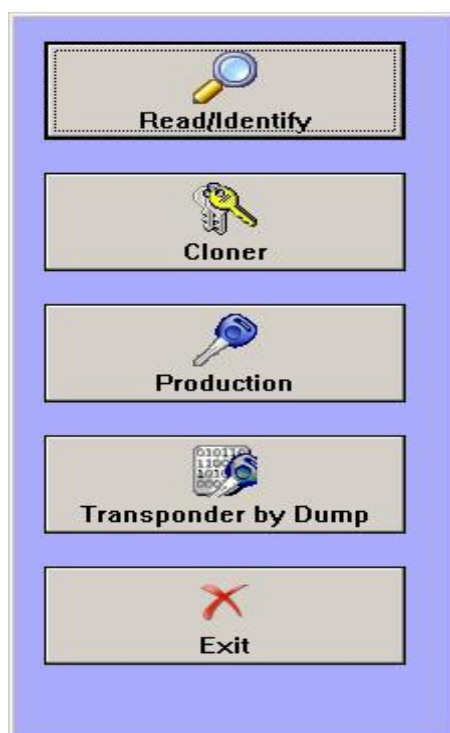
Also you will be asked about existing working keys. If similar master keys are not available you will have an option to reset immobilizer or smart module and to set it in “after sale” mode.

In any case if you have an existing working master key for this vehicle following programming of new keys will be available without need from reset of the anti theft system.

1.3 Special function “Transponder Tool”

Before usage of special function “Transponder Tool” please be sure that your transponder programmer is connected to AVDI interface.

When your transponder programmer is detected will appears list of sub functions – Identification of a key or transponder, Cloning of a key/transponder, Preparation (production) of transponders ready for usage with Toyota/Lexus/Scion vehicles, Programming transponder by the dump of immobilizer/smart system.



1.3.1 Identification of a key or transponder

If you have some key or transponder simply place it near to the antenna of the programmer and press button "Read/Identify". Will be displayed message about type of your transponder and content programmed. If your transponder is some of the known transponder types will be displayed also information about this type (e.g. Texas Crypto 4D type ID67 – Master).

Abrites Commander for Toyota/Lexus/Scion will try to recognize ONLY transponders/keys used in Toyota/Lexus/Scion vehicles. These types are as follows:

- Fixed transponder Texas 4C. This type of transponder consist only identification number and don't consist some authentication logic.
- ID33 transponders – this is another type of transponders that using fixed number programmed in the transponder and used for identification by immobilizer system.
- Crypto transponder Texas 4D. This type of transponder consist a set of data fields programmable by user than can be used from immobilizer system to decide whether key has been programmed in the vehicle. In addition this transponder provides ability for programming of 40 bits secret key which can be used by immobilizer to identify transponder by special authentication algorithm. Depending content of these transponders they can be so named type ID67, ID68 and ID70.

ID67 is intended for usage from Toyota/Scion vehicles.

ID68 is intended for usage from Lexus vehicles.

ID70 is intended for usage from Toyota Europe.

- Crypto transponder Texas DST+. Generally this type of transponder is similar to Texas 4D with exception that provides a wide range programmable data memory plus extended authentication algorithm – here secret key is 80-bits.

These types of transponders are usually used in the smart systems (keyless keys) and also regular keys so known like G-chips (G-transponders).

For proper operation of your transponder programmer refer its user's manual about proper key/transponder position on it.

1.3.2 Cloning of a key or transponder

With the help of this option you can prepare full functional cloning of existing vehicle's keys.

Supported keys/transponders for cloning are:

- Texas 4C fixed. You should use in the cloned key transponder type TPX1 produced by JMA Company or compatible.
- ID33 fixed. You should use in the cloned key transponder type PCF7935.
- Texas 4D transponders (types ID67, ID68, ID70). You should use an empty (brand new) transponder named TPX2 produced by JMA Company or compatible.

Important:

Currently "Abrites Commander for Toyota/Lexus/Scion" NOT supports Texas DST+ transponders for cloning. This will be an issue of the next software releases.

1.3.3 Preparation of transponders/keys ready for usage with the vehicle

Usually when you need to add additional key to the vehicle or all keys are lost you need to use some kind of key or transponder.

Transponder inside of the key should be with a special content to be possible future programming by diagnostic.

"Production" utility provides ability to program an empty (brand new) transponder like transponder ready for acceptance from immobilizer system of the vehicle.

Transponders applicable for this utility are Texas 4D transponders.

While transponder preparation you have a choice to select what kind of key you need to prepare – master key or sub key and also for what model vehicle it is intended.

Please take into account that following rules are applicable for all Toyota/Lexus/Scion vehicles:

- at least one MASTER key should be registered in the immobilizer system
- MASTER key should be first programmed key i.e. after reset of immobilizer system first key programmed should be MASTER
- In many cases immobilizers need registration at least of two keys to finalize learning process

We want to note that in many cases keys ordered from Toyota/Lexus/Scion dealers can not be used after reset of immobilizer system. Reason for this is that these keys in most cases are SLAVE keys and can be used only if an MASTER key has been programmed before. Exactly with this utility you can prepare some new Texas 4D transponder like a MASTER key.

Important issue is that once transponder programmed like ID67, ID68 or ID70 it can not be anymore used for second programming i.e. can not exchange its type. This is because ID67, ID68 and ID70 transponders are with locked data fields after preparation.

1.3.4 Preparation of a key by dump of immobilizer or smart system of the vehicle

This utility will provide ability to prepare a key when you have the dump of the immobilizer system.

Supported immobilizer systems are:

- separate immobilizer boxes (usually EEPROM 93C56,93C66). Supported are also latest versions of immobilizers with encrypted dumps.
- immobilizers integrated in the engine control unit (in most cases using Texas 4C or ID33)
- smart access systems (EEPROMs 93C66 or 93C86)

All needed from you is to read by some IC programmer eeprom of your immobilizer/smart module, to load it in the application, application will automatically identify type of your vehicle and needed transponder or key for programming. When key is programmed with the same IC programmer you can program back the new dump (modified by application) in the immobilizer/smart module.

The generated key will work like MASTER key so you can proceed to add additional keys by diagnostic.

Important note for Smart Systems:

Generated key will work like master key when is near to START/STOP button of the vehicle.

Its remote control will not work.

To program full functional key you should use special function "Key learning" when is selected availability of master key (i.e. without reset of the system, simply "add key").

This way for programming not requires access to the ID-box of the vehicle which usually is placed at very difficult for access place.

1.4 Special function "ECU Flasher"

This special function is intended for tuning purposes and allows you to read and program flash memories of engine control units produced from BOSCH – types EDC15 and EDC16.

1.5 Special function "Dump Tool"

This special function will help you when is present the dump of some electronic control unit to reset it in virgin state, to adjust mileage or to clear crash data records from airbag control modules.

All needed is to select type of electronic control unit and function, to load corresponding dump and to press button "Parameters".

Once dump modified it should be saved and programmed back in the corresponding control unit.

Refer Appendix C about available control units and functions available in "Dump Tool".

1.6 Special function "ID-Box Reset"

"ID-Box" control unit is a part from immobilizer system in the vehicles with a smart access system (keyless keys). "ID-Box" consist synchronization patterns between Smart Access Module and Engine Control Electronics.

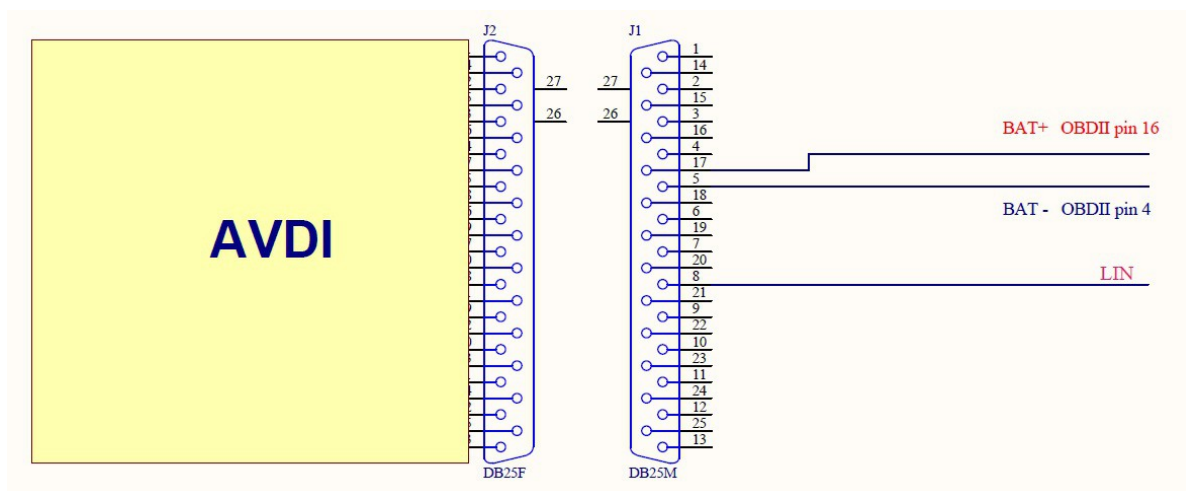
In many cases replacement of Smart Access Module is connected with the need to reset ID-box module to it after sale state (virgin state) to allow acceptance of a new part to the vehicle security system.

Generally resetting of Smart Access Module leads to internal reset of ID-box but in many cases resetting by diagnostic of Smart Access Module is restricted. In this case we have an option to reset Smart Access Module and ID-box with the help of dump tool. The biggest problem is that disassembling of ID-box from vehicle is very difficult task. Usually it is placed at difficult place (in most cases need to remove dash board of the vehicle and many other parts).

By reason of this we offer an option to reset ID-box by connector of Smart Access Module.

All needed to do this is:

1. You should use a custom cable for connection between AVDI and vehicle. AVDI should be powered from this cable and additional wire should be present for connection to the LIN bus.



2. Disconnect connector from Smart Access Module
3. Connect the wire for LIN communication from AVDI and the connector from step 2 where is located LIN bus. Please refer wiring diagrams for your vehicle to check which pin number from connector is LIN bus.



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APPENDIX

1.7 Appendix A – Availability Live Data

Electronic Control Unit	Note
ABS control module	CAN bus
Cruise Control Module	
Driver Door Control Module	
ECB Gateway	
Engine Control Module	
Electronic Transmission Control Module	
Hybrid Control Module	
Immobilizer	
Master Switch	
Passenger Door Control Module	
Rear Console	
Rear Left Door	
Rear Right Door	
Entry & Smart Access Module	
Steering Pad	

1.8 Appendix B – Special functions available from basic diagnostic session

Function	Control Unit	Note
Immobilizer Reset	Immobilizer	
Register Key	Immobilizer/Smart Module/ECU	
Erase Keys	Immobilizer/Smart Module/ECU	
Synchronize	Immobilizer	Synchronization between immobilizer and smart unit
Smart Module Reset	Entry&Smart Access	
Remote Key Registration	Main Body	Registers remote key
Remote Key Deletion	Main Body	
Steering Lock Synchronization	Entry&Smart Access	Synchronize steering lock electronic with Smart Access Module
ECU Synchronization	Entry&Smart Access	Synchronize engine control module with Smart Access Module
ECT reset	Engine Control Module	Resetting learned values ECT
Leave After Sale	Engine Control Module	Cancel auto learning state (key learning) of the engine control module
Throttle Learn	Engine Control Module	
ABS reset	ABS	Reset learned values - should be used if ABS module or YAW rate/G sensor are replaced
ABS alignment	ABS	Reset learned values of ABS.
Gateway reset	Gateway	Used to reset list with assembled in the vehicle control modules. Useful when some unit have been removed from vehicle (or added).
A/C Servo Motor Init	Air-condition	
EMPS Init	Power Steering	

1.9 Appendix C – Dump Tool available options

- Reset of the immobilizer
 - o tokai rika eeprom 93C66 (texas 4D)
 - o tokai rika eeprom 93C66 encrypted (texas 4D or G-chip)
 - o valeo 24C04 (texas 4D)
 - o visteon 93C56
- ID-box reset – 93C46
- Smart Access Module reset – eeprom 93C66 or 93C86
- Engine Control Unit reset (virgin)
- Engine Control Unit mileages recalibration
- Airbag Control Module – crash data clear